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ABSTRACT

Activities were undertaken to help correct deficiencies identified in the Long Range Planning and School Improvement (LRPSI) Project in Lancaster County, Pennsylvania. Diagnostic tests were administered to 800 vocational students to identify those with critical mathematics deficiencies. All instructors were taught interpretation techniques and provided resources for remediation. Twenty-three vocational shops used related mathematics text material to help students improve performance. Over 50 students with identified mathematics deficiencies were helped with the utilization of computers and remedial software. Student safety deficiencies were addressed by introducing extensive audiovisual material into regular vocational safety classes. The increased emphasis on safety instruction also included the formation of safety committees with extensive student involvement. Improving student self-esteem was accomplished by acknowledging student achievement through publication of the vocational honor roll and youth organization publicity. (Supplementary materials include the Long Range Planning Strategy, a list of the computer software used, a list of mathematics books, and computer operating instructions for staff.) (YLB)

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# FINAL REPORT

## LRPSI STAFF DEVELOPMENT ACTIVITIES

94-4013

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DIRECTOR

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APRIL 15, 1985

PENNSYLVANIA DEPARTMENT OF EDUCATION
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## ACKNOWLEDGMENTS

The staff of the Lancaster County Area Vocational Technical Schools wish to express their appreciation to the Vocational Program Support Services for assistance and direction in undertaking this project. The Long Range Planning for School Improvement process has significiently ennanced our delivery system.

We also express our appreciation to the State Equity Coordinator and the personnel of the Eastern Region Field Office. Their extensive assistance in program support, budget modifications, and monitoring reflects the importance of this project and has enhanced implementation in our system.

## ABSTRACT

94-4013 LRPSI STAFF DEVELOPMENT ACTIVITIES

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$25,000.00
7/1/83 to 6/30/84

The purpose of this project was to provide the resources necessary to elevate deficiencies identified in the Long Range Plan for School Improvement.

OBJECTIVES:

1. Conduct diagnostic testing to identify students with critical mathematics deficiencies.
2. Support remedial mathematics instruction through utilization of computers and remedial software.
3. Support related mathematics instruction through the utilization of mathematics text material.
4. Enhance student self-esteem through identification and recognition of successful students.
5. Improve student safety practices through intensified instruction and involvement.

OUTCOMES:

1. Over fifty students with identified mathematics deficiencies have been helped with the utilization of computers and remedial software.
2. Twenty-three vocational shops have utilized related mathematics text material to help students improve performance.
3. Over one-hundred and seventy-five students have been recognized through publication of the vocational honor roll.
4. Instructors have utilized more Audio Visual material in safety instruction.

AUDIENCE:

The ideas and techniques identified in this report are useful to the vocational schools pursuing the Long Range Planning School Improvement Process.

PUBLICATIONS AND AVAILABLE MATERIALS:

- Final Report
- List of Mathematics text material and software that has proven to be useful.

## PURPOSE AND BACKGROUND

This report identifies activities undertaken during the past year that have helped to improve some of the deficiencies identified in the Long Range Planning and School Improvement Project.

The EQA test results identified significient deficiencies in our students mathematics and safety knowledge. The test also identified the need to develop techniques to improve our students self-esteem.

## METHODS AND PROCEDURES

PROJECT OBJECTIVES:

1. Conduct diagnostic testing to identify students with critical mathematics deficiencies.
2. Support remedial mathematics instruction through the utilization of computers and remedial software.
3. Support related mathematics instruction through the utilization of mathematics text material.
4. Improve student safety practices through intensified instruction and involvement.
5. Enhance student self-esteem through identification and recognition of successful students.

PROCEDURES FOR EACH OBJECTIVE:

Student mathematics deficiencies were addressed by initiating diagnostic testing for each student. This process would pinpoint the specific problem areas and allow for a more efficient remediation process. The counseling departments of each school scheduled all sophomore, junior, and senior students through testing in September. The project funding provided the tests, scoring service, and support materials.

Test results were returned by late October and in-service for all staff was conducted at regular faculty meetings.

Deficiencies identified through the testing process were addressed in the following manner:

A. All instructors were given copies of their students test results. They were instructed on the appropriate interpretation of those results.

B. All instructors were given mathematics text material. The text resources were selected on the basis of trade related content - "Mathematics for Auto Mechanics", etc.

C. All instructors were given the opportunity to schedule their students with the counselors for computer assisted instruction. The counselors and administration were instructed on the utilization of mathematics software and micro-computers. The project funding provided the computer software and the related mathematics text material.

Student safety deficiencies were addressed by concentrating on extensive Audio-Visual delivery methods. It was felt that increased utilization of this media would increase student and instructor interest and enthusiasm.

The increased interest would result in better awareness and safety performance. Project funds were utilized to purchase audio-visual and Red Cross material.

Improving student self-esteem was accomplished by concentrating on acknowledging student achievement. Project funds were utilized to purchase and engrave plaques and awards for student recognition. Student award winners from youth organization contests were identified on school plaques that are displayed in lobby showcases. Each vocational shop identified a student of the year and acknowledged this achievement through an engraved plaque. Honor rolls were established for each marking period and successful students were acknowledged in local newspapers and school publications.

## ANALYSIS

Diagnostic mathematics tests were administered to eight hundred vocational students. All instructors were in-serviced on interpretation techniques and provided resources for remediation. Twenty-three vocational shops have utilized related mathematics text material to help students improve performance. Over fifty students with identified mathematics deficiencies have been helped with the utilization of computers and remedial software. Over one hundred and seventy-five students have been recognized through publication of the vocational honor roll and youth organization publicity. Extensive audio-visual material was introduced into regular vocational safety classes. The increased emphasis on safety instruction also included the formation of safety committees with extensive student involvement.

## CONCLUSIONS AND RECOMMENDATIONS

Project 94-4013, Long Range Planning for School Improvement Staff Development Activities, has contributed significent benefits to the school system. Specific mathematics deficiencies have been identified for each student and progress has been made to improve these deficiencies. Improved safety instruction has created a greater awareness for this important topic and student self-esteem has been greatly improved through publicity and recognition of student achievement.

## SUPPLEMENTARY MATERIALS

A. Long Range Planning Strategy

B. Computer Software

C. Mathematics Books

D. Computer Operating Instructions for Staff

Long Range Planning Strategy

1983 - 84

General Guidelines — Total Funds $25,000

Allocations:
- $ 8,000 - Mathematics - District wide for computers and software
- 4,000 - Health & Safety - District wide for safety A-V material and test materials
- 4,000 - Mathematics - Diagnostic testing
- 9,000 - $3,000 per school to implement areas of choice: includes consultants and honorariums

$25,000

| Implementation by: | Explanation | Responsibility | Choice/ Mandatory |
|---|---|---|---|
| | **SELF-ESTEEM** | | |
| December 83 | Central display with plaques by year with each shop and student listed "student of the year" | Principal Teachers | Choice |
| May 84 | Each shop to have an outstanding "student of the year" plaque | Principal Teachers | Choice |
| October 83 | Recognition of grade "A" (Honor Roll) and B (3.0) average at Home School via printed card in each student's report card signed by Principal | Principal Counselor Teachers | Mandatory |
| November 83 | Listing of students on above Honor Roll in school newspaper/local newspaper and in each shop by "quarters" via wall display | Principal | Mandatory |
| December 83 | Use one display case to feature students of Vo-tech via:<br>1. school activities<br>2. social activities<br>3. community activities<br>Picture and profile of student | Supervisor Counselor | Choice |
| December 83 | List staff and pictures in permanent display | Principal | Choice |
| April 84 | Recognition banquet for co-op and outstanding students (honor roll) | Principal Supervisor Co-op | Choice |
| January 84 | Permanent display for youth club membership featuring officers, competition winners | Supervisor Advisors | Choice |

| Implementation by: | Explanation | Responsibility | Choice/ Mandatory |
|---|---|---|---|
| | **MATHEMATICS** | | |
| January 83 | Testing program to discover math deficiencies and identify software needs | Principal Counselor Curriculum | Mandatory |
| April 84 | Research software with craft committees via math lists | Principal Supervisor Curriculum | Mandatory |
| May 84 | Micros and software purchased for each school ( 5 for each school) | Principal Curriculum | Mandatory |
| June 84 | Computers - Principal schedules with necessary shops for implementation via Drafting program as "hub" | Principal | Mandatory |
| Summer 84 | Communications link with home school ie: sending math materials to home school, bringing math material into vo-tech, involvement with math and guidance people at home school | Principal Counselor Curriculum | Choice |
| | **HEALTH & SAFETY** | | |
| November 83 | Validated safety task list and safety testing of all students | Supervisor Curriculum | Mandatory |
| October 83 | Safety committees - ie: students in own shop-twice a year school wide - industry people | Supervisor Teachers | Choice |
| January 84 | Safety films (standardized) in (3) schools via trade areas | Supervisor Curriculum | Mandatory |
| September 84 | Safety Manuel - District Wide | Supervisor Principal Curriculum Teachers | Mandatory |
| Ongoing 83-84 | Safety Displays | Supervisor Teachers | Choice |
| Ongoing 83-84 | Safety Evaluation by outside sources | Supervisor Teachers | Choice |
| Ongoing 83-84 | Including health in our safety program via school nurse and health assistant program<br>a. Blood pressure<br>b. Cleanliness<br>c. Height and Weight<br>d. Nutrition<br>e. Etc. | Principal Supervisor Teachers Nurse | Choice |

COMPUTER SOFTWARE

MATHEMATICS

(Available at each school)

| COMPANY | CONTENT | MATERIAL/FORMAT |
|---|---|---|
| Educational Activities Inc. | Mathematics for Everyday Living:<br>Paying for a meal<br>Working with sales slips<br>Unit pricing<br>Transportation<br>Working with sales tax<br>Finding a job<br>Earning with overtime<br>Earning with commission<br>Working with time<br>Finding net pay | 2 Diskettes<br>. Tutorial Instruction<br>. Guided Practice |
| Quality Education Designs | Decimals:<br>Shifts left and right<br>Reading decimals<br>Adding decimals<br>Multiplying decimals<br>Dividing decimals | 4 Diskettes<br>. Tutorial Instruction<br>. Guided Practice |
| NTS Software | Addition of Decimals | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| Shopware Educational Systems | 1. Measurements used in the construction trades:<br>Linear feet<br>Square feet<br>Board feet<br>2. Calculating the cost of material.<br>3. Figuring project costs utilizing local prices. | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice<br>. Interactive Management Tool |
| NTS Software | Fractions:<br>Parts of fractions<br>Lowest Common Denominator<br>Reading fractions | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| Ludwig | Fractions:<br>Vocabulary of fractions<br>Addition of fractions<br>Subtraction of fractions<br>Multiplication of fractions<br>Division of fractions | 1 Diskette |

(Available at each school)

| | | |
|---|---|---|
| Beard | Algebra Tutor | 1 Cassette<br>. Tutorial Instruction<br>. Guided Practice |

Note - Utilization of a cassette requires additional instructions.

COMPUTER SOFTWARE

MATHEMATICS

(The following software programs are available from the Curriculum Office.)

| COMPANY | CONTENT | MATERIAL/FORMAT |
|---|---|---|
| Educational Activities, Inc. | Basic Mathematics:<br>Addition of whole numbers<br>Subtraction of whole numbers<br>Multiplication of whole numbers<br>Division of whole numbers | 1 Diskette<br>. Guided Practice |
| Beckley-Cardy | Fractions:<br>Least Common Denominator<br>Adding fractions<br>Reducing fractions | 1 Diskette<br>. Guided Practice<br>. Tutorial Instruction when necessary |
| NTS Software | Addition of Decimals | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| " " | Multiplication of Decimals | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| " " | Division of Decimals | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| " " | Decimals, Fractions, Percent | 1 Diskette<br>. Tutorial Instruction<br>. Guided Practice |
| " " | Volume, Area, Perimeters | 1 Diskette<br>. Guided Practice |

## DELMAR MATHEMATICS BOOKS

| B | MJ | WS | | |
|---|---|---|---|---|
| X | X | X | Appliance Repair | Practical Problems in Math for Heating & Cooling Technicians<br>Practical Problems in Math for Electricians<br>Practical Problems in Math for Electronics Technicians |
| | | X | Auto Body | Practical Problems in Math for Automotive Technicians |
| X | X | X | Auto Mechanics | Practical Problems in Math for Automotive Technicians |
| X | X | X | Building Trades Maintenance | Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals<br>Mathematics for Careers - Measurement and Geometry |
| | | X | Commercial Art | Practical Problems in Math for Graphic Arts |
| X | X | X | Cosmetology | Practical Problems for Math in Cosmetology |
| | | X | Distributive Education | Practical Problems in Math for Office Workers<br>Merchandising Mathematics |
| X | X | X | Drafting | Practical Problems in Math for Mechanical Drafting |
| X | X | X | Electrical Occupations | Practical Problems in Math for Electricians |
| | | X | Electronics | Practical Problems in Math for Electronics |
| X | X | X | Food Trades | Math Principles for Food Service Occupations |

| B | MJ | WS | | |
|---|---|---|---|---|
| X | X | X | Graphic Arts | Practical Problems in Math for Graphic Arts |
| X | X | X | Health Assistant | Fundamental Mathematics for Health Careers |
| X | X | X | Heating & Ventilating | Mathematics for Plumbers and Pipe Fitters<br>Practical Problems in Math for Heating & Cooling Technicians<br>Practical Problems in Math for Electricians |
| X | X | X | Horticulture | Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals<br>Mathematics for Careers - Measurement and Geometry |
| X | X | X | Machine Shop | Practical Problems in Math for Machinists |
| | | X | Masonry | Practical Problems in Math for Masons |
| X | | X | Millwork & Cabinetmaking | Practical Problems in Math for Carpenters<br>Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals |
| | X | X | Painting & Decorating | Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals<br>Mathematics for Careers - Measurement and Geometry |
| | | X | Patternmaking | Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals<br>Practical Problems in Math for Carpenters |



(OVER)

| B | MJ | WS | | |
|---|---|---|---|---|
| | | X | Patternmaking | Practical Problems in Math for Mechanical Drafting |
| | | X | Sheet Metal | Practical Problems in Math for Sheet Metal Technicians<br>Practical Problems in Math for Welders<br>Practical Problems in Math for Plumbers and Pipe Fitters |
| X | X | X | Welding | Practical Problems in Math for Welders |
| X | X | X | CCC | Mathematics for Careers - Fractions<br>Mathematics for Careers - Decimals<br>Mathematics for Careers - Measurement and Geometry |

## OPERATING INSTRUCTIONS
## MICRO COMPUTERS

1. TRS-80 Model III Disk Drive.
2. Turn on the computer by pressing the switch located under the keyboard at the bottom right of the computer.
3. Wait for the red light of the bottom disk drive to go out.
4. Insert the diskette into the bottom disk drive - printed side up.
5. Close the disk drive door.
6. Press the Orange Reset Button - upper right of keyboard. (Wait, red light goes out and the screen is activated)
7. The bottom line on the screen (with blinking cursor) requests the operator to enter the current date: Type the date as indicated (example: 10/22/84) Press the Enter Key.
8. Press the Enter Key a second time. (The operator does not need to enter the time)

(PROGRAM WILL BEGIN)

9. From this point on follow the directions as indicated on the screen.
10. To go back to the beginning press the Break Key and type Run, press the Enter Key.
11. You can remove the Disk at any time that the red light is not on.
12. If the red light is not on you may turn off the computer.

IMPORTANT: CARE FOR DISKETTES

- A diskette is a fragile piece of precision plastic. Never allow it to be bent, or roughly handled.
- When writing on a disk label use a soft felt-tipped pen.
- Do not allow the disk to be placed under heavy objects.
- Do not place disks near magnets or near ringing telephones.
- After use, immediately return the disks to their protective envelopes.
- Store disks in a non-metal drawer that is dust and static free.
- Never touch the magnetic surface of the disk with your fingers.
- Never remove the disk from the computer while the red light is on.
- Always turn on the power to the computer before inserting the disk into the disk drive. Always remove the disk from the disk drive before turning power off.